Chronic Spinal Epidural Abscess after Epidural Analgesia
- Case Report -

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Three cases of chronic spinal epidural abscess following spinal epidural analgesia are presented. Spinal epidural abscess is a relatively rare infectious disease. It has recently increased in frequency due to the increased use of epidural steroid injections and epidural analgesia. It is very difficult to detect the spinal epidural abscess from its variable symptoms. So, it is important in making a diagnosis of epidural abscess to take into account the previous history of epidural analgesia.

KEY WORDS : Spinal epidural abscess · Epidural analgesia.

Introduction

Although spinal epidural abscess has been known as a relatively rare disease it has occured more frequently these days than before by increased use of invasive spinal procedure[2,7]. The disease has variable symptoms and rapid course. So, significant neurological sequelae may remain if the correct diagnosis is delayed[6].

The authors experienced three cases of chronic spinal epidural abscess following spinal epidual analgesia for low back pain within a month and report these cases with literatures review.

Case Report

Case 1

A 47-year-old woman was admitted complaining of right leg pain which began following epidural analgesia 16 days before admission. The leukocyte count was 10,700/mm^3 and ESR was 64mm/hour.

Upon her admission, she showed paraparesis. MRI scans showed a large epidural mass that compressed the dura posteriorly(Fig. 1). We performed a partial hemilaminectomy of the first, third and fifth lumbar vertebra, evacuation of a abscess and continuous suction-irrigation. There were some granulation tissue and large purulent material that compressed the thecal sac in the operation area. The patient was treated with continuous suction-irrigation and antibiotics injection for four weeks after operation. Bacteriologic examination of purulent material revealed the presence of Staphylococcus aureus. The neurological status of the patient improved progressively after evacuation of pus. She could walk without support and the ESR was decreased below 20mm/hour at ten weeks after surgery. Four weeks after surgery, MRI scans showed complete disappearance of posterior epidural mass(Fig. 2).

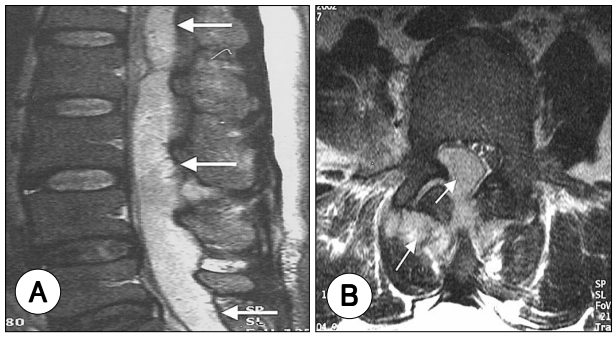

Fig. 1. Preoperative sagittal(A) and axial(B) T2-weighted magnetic resonance images showing posterior dura compression by large epidural mass, representing epidural abscess(arrows).

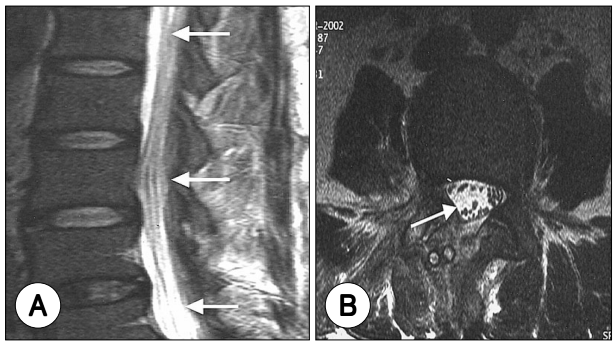

Fig. 2. Postoperative sagittal(A) and axial(B) T2-weighted magnetic resonance images show complete disappearance of epidural mass and recovered dural sac(arrows).

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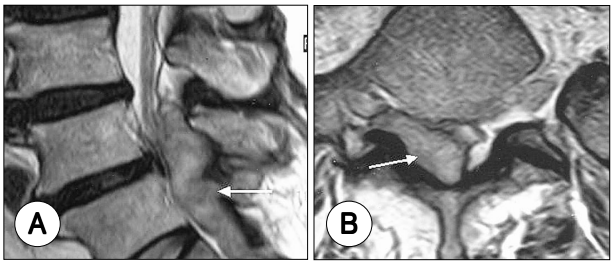

Fig. 3. A : Preoperative sagittal T1-weighted magnetic resonance image shows a low signal intensity mass(arrows)occupying the epidural space from L4 to S1 level, B : Enhanced axial T1-weighted magnetic resonance images show rim-enhanced mass (arrows) compressing the dura in the posterior epidural space and extending into the intervertebral foramen of L4/5.

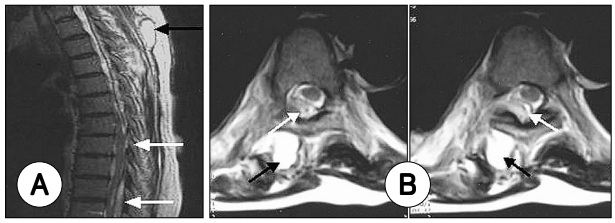

Fig. 4. A : Preoperative sagittal T2-weighted magnetic resonance image shows, high signal intensity masses in the epidural space from T6 to T11 level(white arrows) and in the subcutaneous tissue at the level of T3/T4 where the epidural catheter was inserted(black arrow), B : Preoperative enhanced axial T1-weighted magnetic resonance images show a slightly enhanced mass (white arrow) compressing the dura in the posterior space and mass in the subcutaneous tissue(black arrow).

Case 2

A 66-year-old female was admitted complaining of back pain and right leg pain. Epidural analgesia had been performed three weeks before admission. The leukocyte count was 7,800/mm^3 and ESR was 60mm/hour. MRI scans showed a mass that compressed the dura in the posterior epidural space from L4 to S1 level(Fig. 3). Decompression of the dura was done by performing a partial hemilaminectomy of the fourth and fifth lumbar spine and evacuation of abscess. There were granulation tissue and purulent material that compressed the dura in the operation area. The patient was treated with continuous suction-irrigation and antibiotics injection for four weeks after operation. Pus cultures taken during the surgery proved negative for organisms. We used three different kinds of antibiotics empirically that could cover Gram positive, Gram negative and anaerobic organisms. The ESR was decreased below 20mm/hour at 8 weeks after surgery. She recovered without any complications and was discharged at 4 weeks after surgery.

Case 3

A 57-year-old female was transferred to our department for the treatment of pus discharge from the epidural catheter insertion site. The epidural catheter was inserted for the treatment of severe burning pain associated with a herpes zoster infection involving T3-T5 dermatomes. The catheter was removed as soon as the pus was discharged. MRI scans revealed epidural abscess compressing the spinal cord from T6 to T11 level(Fig. 4). She showed mild paraparesis when she was transferred to our department. The leukocyte count was 17,600/mm^3 and ESR was 120mm/hour. A partial hemilaminectomy was done from the level of T6 to T11. Purulent material and granulation tissue were removed from the epidural space. She was treated with continuous suction-irrigation and antibiotics injections for four weeks. Pus culture taken from the operative site proved positive for Staphylococcus aureus. The ESR was decreased below 20mm/hour at 11 weeks after surgery. She recovered without any complications and was discharged at 6 weeks after surgery.

Discussion

Epidural abscess of the spine is a rare condition with an incidence rate of approximately 0.2~1.2 per 10,000 hospital admissions per year[1]. Infection may occur by hematogenous spreading from a remote focus of infection, by spreading from a contiguous focus of vertebral osteomyelitis or a disc space infection, or from direct inoculation at the time of operation, epidural steroid injection, lumbar puncture, or epidural catheterization[1,4]. It has recently increased in frequency due to the increased use of medical instrumentation, intravenous drug abuse, and percutaneous spinal procedures[10].

Epidural abscess is classified into acute and chronic according to symptom duration, that is, 12~16 days for the acute, more for the chronic[5].

Factors that may be associated with a higher incidence of infection include diabetes mellitus, intravenous drug abuse, prior back trauma, and pregnancy[1,2,4].

Most cases of spinal epidural abscess are a result of Staphylococcus aureus, which accounts for 54~80% of cases in which the organism is known[3,5]. Gram negative organisms have been reported with increasing frequency due to antibiotics abuse and immune-suppressed disease[1].

The leukocyte count and the ESR are generally increased. MRI has proved extremely useful and is now the imaging study of choice. It is noninvasive and safe and is able to visualize the degree of cord compression and the extent of abscess in all directions. So it is useful to detect the patient in the early course of the disease. The degree of enhancement of MRI scans for the recovered patient is decreased. Besides ESR, MRI scans are a useful tool to monitor the patient who is under treatment[7,9].

An epidural abscess is a medical and surgical emergency.

The goals of treatment are eradication of infection, preservation or improvement of the neurologic status, relief of pain, and preservation of spinal stability. The patient with epidural abscess is treated medically or surgically. But as a rule a patient with the disease is treated by eradication of purulent material and granulation tissue and then injection of appropriate antibiotics. The surgical approach depends on the location of the abscess. Because the location of abscess is posterior to the spinal cord in most cases, laminectomy is generally the treatment of choice[8]. Antibiotics should be given in maximal dosage for at least two weeks and most authors recommend 3 to 4 weeks of parenteral therapy. Antibiotics must be administered parenterally for at least 6 to 8 weeks for coexistent vertebral osteomyelitis[1]. The continuation of antibiotics injection can be determined by monitoring of ESR level periodically. If there are no predisposing foci and clues to the bacterial cause on examination of the Gram stain, a penicillinase-resistant penicillin should be used initially[1].

Conclusion

Spinal epidural abscess has recently increased in frequency. The increase in spinal epidural analgesia is one of the causes that increase the frequency of the disease. It is important in making a diagnosis of epidural abscess to confirm the previous history of epidural analgesia. The authors experienced three cases of chronic spinal epidural abscess following the spinal epidural analgesia and reported these cases with literatures review.

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